CONFIRMED RECORDS OF *LEUCTRA VARIABILIS* AND *ALLOPERLA USA* IN MARYLAND (PLECOPTERA: LEUCTRIDAE, CHLOROPERLIDAE), WITH ADDITIONAL COMMENTS ON THE FORMER SPECIES[1]

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ABSTRACT: The status of *Leuctra variabilis* in Maryland is clarified. First time Maryland collecting records of this species are reported. Earlier collecting records of *L. variabilis* in Maryland are likely those of closely similar *L. carolinensis*. SEM photomicrographs of the male terminalia of both species are provided. A new state record for *Alloperla usa* is also reported.

Stark et al. (1986) originally recorded some 33 species of stoneflies from Maryland. Duffield and Nelson (1990) subsequently published a checklist that included some 58 species. Grubbs (1997) updated that listing by recording some 36 additional species as new for this state bringing the total of stonefly species to 95. More recently Grubbs and Stark (2001) increased this number by two species of *Perlesta*. The objective of this note is to clarify the status of *Leuctra variabilis* in Maryland, previously reported as new for this state by Grubbs (1997), and add a record for *Alloperla usa*.

1. *Leuctra variabilis* Hanson: CHARLES County, Bog in powerline right of way (76°54'N, 38°34'W), Road off Piney Church Road, north of Brice, 2 - 3 miles south of St. Charles, 14 males, 9 females November 11, 1997 (R. M. Duffield); PRINCE GEORGES County, Suitland Bog (76°55'N, 38°51'W), 10 males, 10 females, November 10, 1995 (R. M. Duffield), Suitland Bog, 6 males, 18 females, December 9, 1995 (R. M. Duffield).

In Maryland this species is present in the transition zone from the Piedmont to the Atlantic Coastal Plain Physiographic Province and has been found in close association with bogs containing the widespread purple pitcher plant, *Sarracenia purpurea* Linnaeus. At a time of year when other insects are scarce, autumn or winter occurring stoneflies may be a useful prey item. Examination of these plants at the Prince Georges County, Suitland Bog site on January 15, 2001 revealed 19 specimens of *S. purpurea* containing 40 trapped adult representatives of *L. variabilis*: 9 males, 18 females, 13 undetermined sex.

Grubbs (1997) included *L. variabilis* among his new records for Maryland. However, Grubbs recorded collecting this species in the spring, whereas our records and previous collecting records of this species in other states indi-

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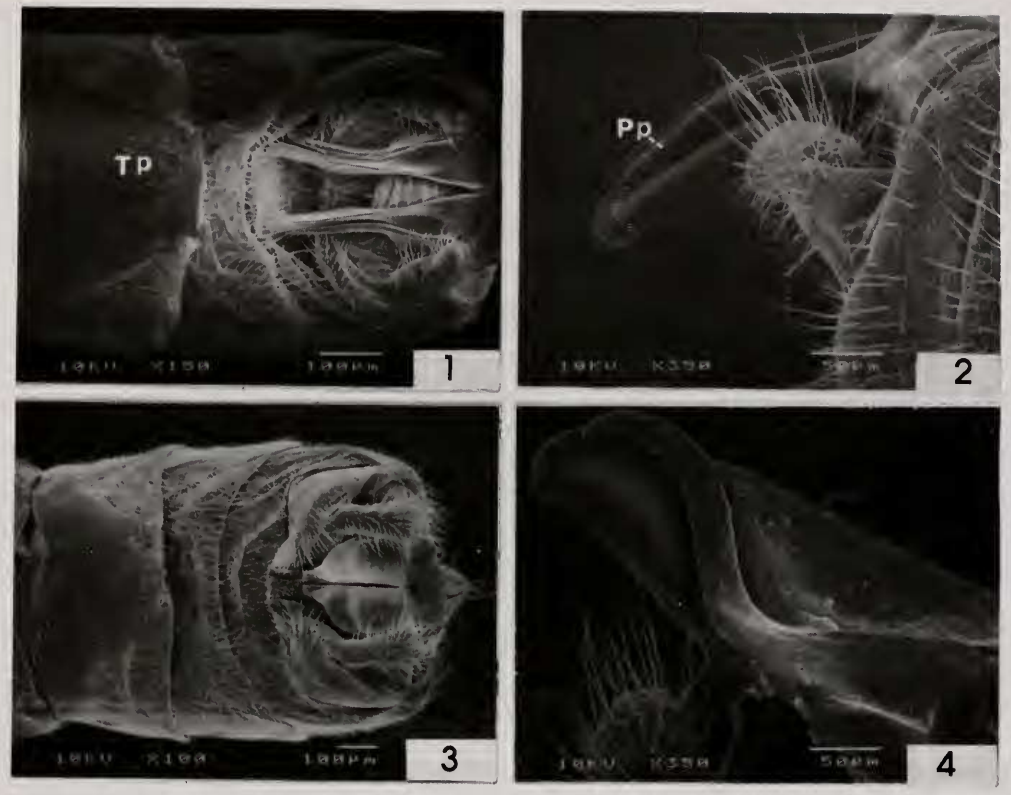

Figures 1-4. 1 - 2. *Leuctra variabilis* male terminalia: 1. Seventh tergal process, dorsal view; 2. Paraproct and specillum, lateral view. 3 - 4. *L. carolinensis* male terminalia: 3. Seventh tergal process, dorsal view; 4. Paraproct and specillum, lateral view. Tp = basal tergal process, Pp = paraproct.

cate that *L. variabilis* is an autumn species (Hanson, 1941, Masteller, 1996, Harper and Harper, 1997). To clarify this inconsistency, material was collected on June 13, 1998 from five streams in Garrett County, Maryland that were reported by Grubbs (1997) at that time of the year as being collection sites for *L. variabilis*. We did not find *L. variabilis*, but three species of *Leuctra* were collected: *L. carolinensis* Claassen, *L. duplicata* Claassen, and *L. ferruginea* (Walker). *Leuctra variabilis* and *L. carolinensis* were considered by Hanson (1941) to be closely similar species and Harper and Harper (1997), based on the beaded apical margins of the seventh tergal basal process and distribution of setae in the membranous region of the seventh tergite, placed them together in the "tenuis" species group. They differ, however, in that the seventh tergal basal process of *L. variabilis* gradually narrows to a somewhat truncate apical margin (Fig. 1, Tp), although as Hanson (1941) notes this feature is somewhat variable, and the paraprocts are only slightly curved (Fig. 2, Pp), whereas in *L. carolinensis* the apical margin of the seventh tergal process appears somewhat broadly trilobed (Fig. 3) and the curvature of the paraprocts is more pronounced (Fig. 4). Based on the preceding information we consider it likely that Grubbs' (1997) collection records of *L. variabilis* were actually *L. carolinensis*.

Our collecting records for the latter species at the Garrett County sites are as follows : Big Muddy Creek, 2 males, 2 females, (R. M. Duffield); Mill Run, 1 female, (R. M. Duffield); Junction of Little Laurel Run and Jennings Road, 6 males, 12 females (R. M. Duffield); Tolliver Run, 8 males, 18 females (R. M. Duffield), Bull Glade Run, 29 males, 29 females (R. M. Duffield).

2. *Alloperla usa* Ricker: GARRETT County, Little Laurel Run, 1 male, 2 females, June 13, 1998 (R. M. Duffield).

Grubbs (1997) observed that this species had been collected in West Virginia, Virginia and Pennsylvania and listed it as one of 55 species that would likely be found in Maryland as well.

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